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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,397	01/02/2004	Takeshi Yamamoto	247210US2	2859

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EXAMINER	
CHEN, WEN YING PATTY	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/749,397	YAMAMOTO, TAKESHI	
	Examiner	Art Unit	
	Wen-Ying P. Chen	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 19 is rejected under 35 U.S.C. 102(e) as being anticipated by Cho et al. (US 2004/0114087).

With respect to claim 19: Cho et al. disclose in Figure 12 a liquid crystal display apparatus having a liquid crystal layer (element 3) interposed between a first substrate (element 210) and a second substrate (element 100) comprising: a spacer material on the first substrate where the spacer material has a first size (element 323) in accordance with a first gap region that includes a first gap for interposition of the liquid crystal layer, and a spacer material with a second size (element 321), which is smaller than the first size, in accordance with a second gap region that includes a second gap. Cho et al. also disclose a method of manufacturing the specified liquid crystal display apparatus on Page 7, 1st paragraph, where the spacer material is patterned in each of the first gap region and the second gap region, and adjusting a height of the spacer material patterned in the first gap region and a height of the spacer material patterned in the second gap region.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-7, 9-13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manabe et al. (US 6570639) in view of Cho et al. (US 2004/0114087).

With respect to claims 1 and 3-6: Manabe et al. disclose in Figure 1A a liquid crystal display apparatus configured to have a liquid crystal layer (element 70) interposed between a first substrate (element 110) and a second substrate (element 120) comprising a first gap region (region defined between element 31) with a first gap for interposition of the liquid crystal layer between the first substrate and the second substrate; a second gap region (region defined between element SP and element 31) with a second gap that is smaller than the first gap; a first columnar spacer (element 31 on top of element 24R) that is formed in the first gap region on the first substrate; and a second columnar spacer (element 31 on top of element 24B) that is formed in the

second gap region on the first substrate. Manabe et al. also disclose the first substrate to include in the first gap region a first color filter layer (element 24R) that mainly passes first color light, and in the second gap region, a second color filter layer (element 24B) that mainly passes second color light. Manabe et al. further disclose that the first substrate includes scan lines disposed in a row direction, signal lines disposed in a column direction, switching elements disposed near intersections of the scan lines and the signal lines, and pixel electrode that are connected to the switching elements and are disposed in a matrix (column 4, lines 30-37); a light shield layer that is disposed in a picture-frame shape along a peripheral edge of the display region (Abstract), the columnar spacer and the light shield layer being formed of the same material (column 5, lines 28-38); and a counter electrode (element 22) that is common for all pixels. But, Manabe et al. do not disclose the contact area of the columnar spacers being different. However, Cho et al. disclose in Figure 3a contact area of the first columnar spacer (element L1), which contacts the first substrate, is greater than a contact area of the second columnar spacer (element L2), which contacts the first substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the columnar spacer configuration disclose by Cho et al. into the display apparatus disclose by Manabe et al. so that with the different contact area of the spacers the amount of gap variation between the pixels at high temperature can be controlled.

As to claims 7, 9-13, and 15-18: Manabe et al. disclose in Figure 1A a liquid crystal display apparatus configured to have a liquid crystal layer (element 70) interposed between a first substrate (element 110) and a second substrate (element 120) comprising a first gap region (region defined between element 31) with a first gap for interposition of the liquid crystal layer

between the first substrate and the second substrate; a second gap region (region defined between element SP and element 31) with a second gap that is smaller than the first gap; a first columnar spacer (element 31 on top of element 24R) that is formed in the first gap region on the first substrate; and a second columnar spacer (element 31 on top of element 24B) that is formed in the second gap region on the first substrate. Manabe et al. also disclose the first substrate to include in the first gap region a first color filter layer (element 24R) that mainly passes first color light, and in the second gap region, a second color filter layer (element 24B) that mainly passes second color light. Manabe et al. further disclose that the first substrate includes scan lines disposed in a row direction, signal lines disposed in a column direction, switching elements disposed near intersections of the scan lines and the signal lines, and pixel electrode that are connected to the switching elements and are disposed in a matrix (column 4, lines 30-37); a light shield layer that is disposed in a picture-frame shape along a peripheral edge of the display region (Abstract), the columnar spacer and the light shield layer being formed of the same material (column 5, lines 28-38); and a counter electrode (element 22) that is common for all pixels. But, Manabe et al. do not disclose the dimensions or the volume of the columnar spacers being different. However, Cho et al. teaches on Page 3, 4th paragraph that the dimensions of the first columnar spacer is greater than the dimensions of the second columnar spacer, and that since the two columnar spacers have varied dimensions, the difference in volume of the spacers is thereby implied. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the columnar spacer configuration disclose by Cho et al. into the display apparatus disclose by Manabe et al. so that with the different dimensions and volume of the spacers the amount of gap variation between the pixels at high temperature can be controlled.

Claims 2, 8, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manabe et al. (US 6570639) and Cho et al. (US 2004/0114087) in view of Nishida et al. (US 6842207).

With respect to claims 2, 8, and 14: Manabe et al. and Cho et al. disclose all the limitations of the liquid display apparatus set forth in claims 1, 7, and 13 but Manabe et al. and Cho et al. do not disclose the color filter layers to be able to pass different color light wavelengths. However, However, Nishida et al. disclose in Figure 13a the first gap region includes a first color filter layer (element 7) that mainly passes first color light, the second gap region includes a second color filter (element 8) that mainly passes second color light and that the first color light has a wavelength that is greater than a wavelength of the second color light (column 12, lines 15-17). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the color filter layer disclose by Nishida et al. into the display apparatus disclose by Manabe et al. and Cho et al. so that a very good display which does not exhibit any coloring in whichever direction it is viewed may be obtained, as taught by Nishida et al. (Abstract).

Relative Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 2003/0048403 and US 6593981.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen-Ying P. Chen whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wen-Ying P Chen
Examiner
Art Unit 2871

wpc

ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
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